

DEPARTMENT OF TRANSPORTATION AND RELATED AGENCIES APPROPRIATIONS FOR 1970

HEARINGS
BEFORE A
SUBCOMMITTEE OF THE
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

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FIRST SESSION

SUBCOMMITTEE ON DEPARTMENT OF TRANSPORTATION AND RELATED
AGENCIES APPROPRIATIONS

EDWARD P. BOLAND, Massachusetts, Chairman

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PART 1

Civil Aeronautics Board

Federal Highway Administration

Federal Railroad Administration

Interstate Commerce Commission

National Transportation Safety Board

United States Coast Guard

Washington Metropolitan Area Transit Authority

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FEDERAL HIGHWAY ADMINISTRATION

pg. 1015

Expansion and strengthening of both in-house and contract research and development effort requires an increase of \$3,160,000 in fiscal year 1970 to a new total of \$15,330,000. Included in this increase is an additional \$2,200,000 for the contract program, \$300,000 for a new research implementation program, and \$500,000 for planning needed highway research facilities.

pg. 1028

The new research implementation program is being established to identify and evaluate completed research projects suitable for demonstration and test, using BPR in-house technical specialists. The \$300,000 requested will be used for demonstration projects in the following categories: incorporation of special design features, special construction features, highway maintenance practices, and the effect of special highway features on operations.

Research activities at the Fairbank Highway Research Station have grown to the point where existing laboratory facilities are completely inadequate. Additional space is required for priority programs for the Traffic Systems Division. Current research in the heavy structural test program cannot proceed because crowded conditions produce safety hazards. The amount of \$500,000 is necessary so that planning and engineering studies may be conducted prior to actual construction.

An increase of \$170,000 and 17 positions are requested for program operations. These positions are needed to enable the field organization to perform additional functions required by the Federal-Aid Highway Act of 1968 and to deal with complex problems arising as the organization becomes increasingly involved in transportation systems of urban areas.

Mr. Provan. The tentative schedule for moving into the Nassif Building is that the Bureau of Public Roads would move in on the third of October. The weekend of the 3d of October, and then the administrator's office would move in 2 weeks later and the Safety Bureau 2 weeks later than that. So it would be the third, the 17th and then the end of the month of October. pg. 1086

Mr. Boland. What other building in the Washington area will house components of the Federal Highway Administration?

Mr. Provan. The headquarters will all be in the Nassif Building. We will, of course, have the Division Office, which will be in the District, and what we call region 15 will be out in Arlington, but all of the headquarters will be in the Nassif Building.

RESEARCH AND DEVELOPMENT ORGANIZATION

pg. 1037

Mr. Boland. What consideration has been given to the creation of a "research and development" appropriation for the Federal Highway Administration? Both the Bureau of Public Roads and the National Highway Safety Bureau have significant research and development. As you will recall, the committee noted in the hearings last year that there appears to be some areas of duplication. In your opinion, Mr. Turner, what are the pros and cons of the creation of one R. & D. appropriation and organization for your administration?

Mr. Turner. This is another one of the elements that is being considered in this study we referred to a while ago. There are advantages in a single R. & D. unit in that it supposedly-and I emphasize "supposedly"-would eliminate duplication or overlaps. We think we can accomplish the same thing by better supervision and management. This we are attempting to do. I think we have located and eliminated some of the duplication that we talked about last year at the hearing and what may appear to be duplication in terms of the activities which are complementary to each other, tailored to fit a particular need rather than being duplicative of each other.

IN-HOUSE RESEARCH AND DEVELOPMENT EFFORTS

pg. 1136

Mr. Boland. You have some in-house research and development efforts. What are they? What are your major in-house research and development efforts and how many people do you have working in this area on your in-house research and development effort?

Mr. Bartelsmeyer. The in-house people number 252. Seventy-three of these, including 37 professional employees, are at headquarters and 179 employees, including 121 professionals, are at the Fairbank Laboratory.

Mr. Boland. Are these professionals actually engaged in in-house research and development?

Mr. Bartelsmeyer. Yes; their responsibilities include conducting in-house research and development activities.

Mr. Boland. Will you detail for the record specifically what this staff does in in-house research and development? What particular research and development programs does the staff concern itself with and how many of the staff work on in-house research and development programs?

Mr. Bartelsmeyer. The in-house research staff is also responsible for monitoring and developing the contract work.

Mr. Boland. Does it do any research and development on its own?

Mr. Bartelsmeyer. Yes, we currently have active in-house research efforts in such fields as soils, materials, pavement markings, suspension bridge design, and computer applications.

Mr. Boland. How many people do you have working in this area? I am talking about working specifically on soils, bridge design, and pavement markings? It seems to me once you have gone over that material that you have done about all you can do in research.

Mr. Bartelsmeyer. I have a breakdown here that may provide this information.

Mr. Boland. Supply it for the record. We are just interested in knowing what your staff does, what the professionals do in in-house research and development. We understand you have to have people to monitor the contracts that are entered into by the administration, by the Bureau. We would also like to know specifically what your own staff does in the way of research and development.

Mr. Bartelsmeyer. We will furnish this for the record.
(The information follows:)

Approximately one-half of the man-hours of specialized division personnel are devoted to in-house research. This is equivalent of 102 to 107 man-years of effort.

A large portion of the in-house effort relates to the physical properties of highway materials, the behavior of such materials under stress of loads, the improvement of designs for bridges and pavements, the development of means of protection of highway structures from wind and flood, and similar research oriented toward the physical characteristics of highway systems.

Such research does not represent repetitive investigation of the same areas year after year, but as new construction materials enter the market, new technology becomes available, or as highways and structures are subjected to greater stresses and heavier loads, new approaches through research are needed to maintain an efficient highway transportation system.

The tabular material of ongoing in-house research studies provided for the record in response to a previous question shows a detailed breakdown of the current in-house effort.

FAIRBANK HIGHWAY RESEARCH STATION

pg. 1177

Mr. McFall. Fairbank Highway Research Station.
Place the justification on page 42 in the record at this point.
(The justification follows:)

5. New Research Facilities at Fairbank Highway Research Station

The staff research activities of the four technical divisions at the Fairbank Highway Research Station have now grown to the point where existing laboratory facilities are completely inadequate. Some of the priority experimental programs of the Traffic Systems Division cannot be initiated until space is obtained, and current research in the heavy structural test program is producing such crowded conditions that studies cannot proceed concurrently because of safety hazards. A program of capital improvements is required.

It is recommended that an appropriation for the planning and engineering work in Phase I be approved in fiscal year 1970:

Phase I, fiscal year 1970, \$500,000 for planning, architects, and engineering funds.

Phase I, fiscal year 1971, \$1,500,000 for site preparation and preliminary construction.

Phase II, fiscal year 1971, \$5,500,000 for construction of traffic systems operations research laboratories, expansion of structures and applied mechanics laboratory and conversions to existing laboratories.

Phase II, fiscal year 1972, \$3,500,000 for construction of auxiliary facilities, office building for library, cafeteria and demonstration and training facilities, additional specialized field facilities.

Since joint use of the facilities by the Bureau of Public Roads and the National Highway Safety Bureau is contemplated, later adjustment of the amounts may be required.

RESEARCH FACILITIES

You are requesting \$500,000 for the first step in the construction of new research facilities at the Fairbank Highway Research Station. This is the first increment of a program estimated to cost \$11 million.

Would the 75-percent freeze on new Government construction affect the fiscal year 1970 request?

Mr. Turner. Not the fiscal 1970 request, because this is purely for planning and preparatory work. No construction would be done out of this.

Mr. McFall. What part has been played by the National Highway Safety Bureau in the planning of the new facilities?

Mr. Turner. This facility will jointly serve the needs of both of the other two Safety Bureaus, the National Highway Safety Bureau and the Motor Carrier Safety Bureau, in addition to public roads needs. The Safety Bureau, however, may develop special needs that cannot be accommodated at the Fairbank facility.

Mr. McFall. Have they participated in the planning of the facility?

Mr. Turner. Yes, they have been a part of the team that has studied the need.

Mr. McFall. Does the \$11 million estimate include facilities for the National Highway Safety Bureau, or does it only include facilities required by the Bureau of Public Roads?

Mr. Turner. No, sir; it will be used to meet the needs of all the FHWA offices.

Mr. McFall. The committee has indicated that maximum joint use of research facilities should be made by all component organizations of the Department of Transportation. Are there any plans to have the FAA, the FRA, or any other organization within the Department use the proposed new facilities? Do any of them use the present Fairbank facility?

Mr. Turner. The Fairbank facility, of course, originally began as a Public Roads laboratory exclusively. With the creation of the Department safety bureaus, we have combined our needs, and it is servicing both of them.

There is a facility planning group within the Department that is interested in the needs of the entire Department. It has considered the Fairbank installation and included it in the total package of needs of the entire Department, and it will be available for Federal Highway Administration, FAA, and any of the other parts of the Department.

It will be, in effect, a combined departmental facility as well as being available for any other agency of Government that has needs of that type.

Mr. McFall. This is located out by the CIA building?

Mr. Turner. Yes

Effectively, I would turn it around the other way. The CIA is located next to us. That was originally our Public Roads property out there.

Mr. McFall. For seniority purposes, since you were the first in the area, we will say it that way.

How many square feet of space are presently at the Fairbank Station?

Mr. Turner. 51,850 square feet.

Mr. McFall. How many square feet are proposed for the new facility?

Mr. Turner. Under phase 1, 185,000; and under phase 2, 167,000 square feet.

(Off the record)

RESEARCH FACILITIES

pg. 1455

Mr. McFall. What are your plans for research facilities including the test tracks?

Mr. Brenner. I will submit that for the record.

(The information follows:)

The research, test and development facilities currently required to carry out the two safety acts enacted in 1966 have been identified in the report to Congress and in a series of more detailed studies conducted after the report was submitted in October 1968. The basic premise of our plan is to utilize existing facilities wherever possible and to request new construction authorizations to meet requirements which cannot be economically met with existing facilities.

1. Planned new construction:
 - (a) Driving simulation laboratory.
 - (b) Compliance test facility.
2. Capital improvements in existing facilities:
 - (a) Bio-Engineering Laboratory (augmentation of the Federal Aviation Administration Aeronautical Center at Oklahoma City, Oklahoma).
 - (b) Applied Research Laboratory (augmentation of Fairbank Highway Research Station at McLean, Va.)

A third major requirement is for a capability to conduct a wide variety of tests on drivers, vehicles and roadway interactions. These tests can only be conducted on a proving ground type of facility. In lieu of building a new facility, our efforts will be devoted to getting research underway in existing or soon-to-be-built facilities, such as those associated with universities.

Authorization for a Government proving ground is, therefore, not being requested at this time; however, such a request will be made in the event the presently planned alternative of using existing facilities proves unworkable.

Mr. Minshall. Will you yield for a minute? There was an article that appeared recently in a paper, in the Detroit News, I believe, to the effect that the National Highway Safety Bureau has been allowed \$10 million to prepare a multimillion-dollar automotive proving ground.

Mr. Brenner. I would like to submit for the record our very detailed reply to that particular report which was totally erroneous.

Mr. Minshall. Will you also send a copy of that response to Congressman Frank Bow because he was the one that handed me the letter.

Mr. Brenner. I think we already have.

Mr. McFall. Also provide information as to the estimated total cost of the research facilities and their locations.

(The information follows:)

The presently estimated cost of the new construction and capital improvement program outlined above is as follows:

Facility	
Driving simulation laboratory-----	\$35,300,000
Compliance test facility-----	8,600,000
Bioengineering laboratory-----	700,000
Applied research laboratory-----	3,300,000
	<hr/>
Total-----	47,900,000

These amounts include the cost of design.

Although the current plan, whereby the requirements for proving ground type facilities will be satisfied through the use of existing facilities, eliminates any present need for funds for new construction; funds may be required to modify these facilities to configure them for our specific tests.

It is generally planned that facilities will be located on real estate that is presently under Government control. As stated earlier, it is planned that the required capability in the areas of bioengineering and applied research will be satisfied through capital improvements to existing facilities at the Federal Aviation Administration Aeronautical Center at Oklahoma City, Okla., and the Fairbank Highway Research Station at McLean, Va. Site selection criteria for the driving simulation laboratory and the compliance test facility have been completed and action initiated to start site selection proceedings.

FAIRBANK HIGHWAY RESEARCH FACILITY

pg. 1180

Mr. McFall. What are some of the efforts you wish to undertake which cannot be accommodated at the present facility? Will you briefly say something about this, and then expand on it for the record?

Mr. Turner. May I have Mr. Shufflebarger do that? He has been working closer with that than I have.

Mr. Shufflebarger. We feel there are needs for this kind of space right now. Conditions are very crowded out there. We have work going on in hallways where people have their offices.

The kinds of facilities we are talking about immediately, the highest needs, are in the area of research in traffic control. We have a number of electronic systems, the variety of systems we have talked about today.

As these several systems progress, we will need to study them in the laboratories to make sure that they all fit together. If we have a passing aid system and a ramp merging system, it is necessary to blend them together to have a joint system on the car or at the roadside that will take account of both.

Research is needed in the laboratory for this kind of thing. It is the kind of research that is important for the Government to do. They cannot depend on a contractor to cover every single aspect that the Government has to worry about, such as public acceptance, fail-safe measures, and combinations of systems.

(Additional information follows:)

TYPICAL STUDIES TO BE PERFORMED IN PROPOSED LABORATORIES AT FAIRBANK HIGHWAY RESEARCH STATION

TRAFFIC SYSTEMS

(a) Testing performance of traffic control system components including reliability.

(b) Feasibility of concepts and processes for areawide traffic surveillance.

- (c) Traffic flow simulation experiments.
- (d) Highway applications of communications techniques.
- (e) New techniques of roadside communication--visual and auditory.
- (f) Driver abilities in relation to highway system design.

MATERIALS AND QUALITY CONTROL

pg. 1180

- (a) Environmentally controlled research on hydraulic cement.
- (b) Structural materials under laboratory environmental exposure.
- (c) Research on properties and performance of bituminous mixtures.
- (d) Develop procedures for conducting tests.
- (e) Artificial weathering facilities.
- (f) Assess properties and fail-safe characteristics of new metal and alloy applications.

STRUCTURES AND PAVEMENT SYSTEMS

pg. 1181

- (a) Elastic stability in large trusses.
- (b) Design criteria for large bridge bracing systems.
- (c) Load distributions of proposed deck systems.
- (d) Testing scientific models of proposed highway structures.
- (e) Research in dynamics of moving loads, wind and seismic effects, and shock and impact effects.
- (f) Development of inspection devices for structures.
- (g) Ventilation and air flow problems in joint development work.
- (h) Full scale moving load tests of pavements.
- (i) Research in earth pressures on footings and supports.

ENVIRONMENTAL CONTROL

- (a) Scientific models of storm drainage systems.
- (b) Water flow and scour prevention research.
- (c) Tunnel and air-rights structures research.
- (d) Highway illumination concepts and techniques.
- (e) Simulation of rain, snow, ice, and fog effects.

ENGINEERING AND MAINTENANCE METHODOLOGY

- (a) Extend and improve use of automatic data processing in highway engineering.
- (b) Visual and perspective simulation for highway design.
- (c) Photogrammetry and remote sensing applications.
- (d) Development of automated maintenance data collection.

Mr. McFall. Is this the kind of research that must be done very close to the National Capital on prime land? Would we be better off to put this facility 10 miles down in Virginia somewhere, or 10 miles out in Maryland?

Mr. Turner. I think we would not find it is merely (nearly) as efficient as combining it there because the traffic operation item, to pick up the one he is talking about, is necessarily tied with many of the other things that we also will be working on - the application of the results of that study throughout the design parts of the program, the question of finance, and general administration of the program.

If we moved that group away from the rest of the group, their neighbors and coworkers, I think we would lose value that we could not replace.

Mr. McFall. What is the investment in physical plant that you have already at this test station?

Mr. Turner. Aside from the land, I think we put about \$4 million into what we have out there at the present time, but that is not \$4 million of 1969 dollars. Those were back in the early 1940's and early 1950's that we put buildings out there which are there now.

Mr. McFall. I would assume that as the projects are completed, equipment associated with them is removed or turned over to a new project. This is in reference to the need for space.

Can you give us a few examples of projects at Fairbank which were completed in fiscal 1969?

The question is really intended to determine how you use your space, whether you have a turnover here. I think in answer to the previous question you said you had some new projects which require more space, more buildings; that you are overcrowded now. When we designed that question, we thought you are completing certain projects as you proceeded thus making more space available for use on new projects.

Presumably, the answer would be something along the line that there is more and more research being done, and you need more and more space, and by the completion of projects you will not free that space. pg. 1182

Mr. Shufflebarger. Yes, sir; that is the way I would describe it, because most of these facilities and space we are talking about would serve more than one particular piece of work.

If you have a laboratory or a work area that has to do with the traffic control, there might be a variety of individual studies in the traffic control area or in the traffic behavior area, wherein you would make use of this laboratory space.

In a given period we might be working on one particular project, and in the following period we would be working on another project in the same area and using the same laboratory.

There are other kinds of laboratories in the physical research area for subjects such as structural design, studies of bridge vibrations and aerodynamic characteristics.

1457

U.S. DEPARTMENT OF TRANSPORTATION,
FEDERAL HIGHWAY ADMINISTRATION,
Washington, D.C., August 1, 1968.

Mr. Ross Roy,
Chairman of the Board, Ross Roy, Inc.,
Detroit, Mich.

DEAR Mr. Roy: Secretary Volpe has asked me to reply to your letter of May 28, 1968, wherein you expressed concern over the National Highway Safety Bureau's plans for the development of research, development, and test facilities.

Before taking up each of the specific points in your letter, I might make some general comments.

Last year about 55,000 people died in vehicle crashes in the United States which represented an alltime high. By 1972, if present rates continue, 2 million Americans will have died in a crash since the introduction of the automobile. Over 3,500,000 people are injured every year and \$15 billion is lost through vehicle crashes. These grim statistics imparted a sense of urgency to the Congress when they enacted the National Traffic and Motor Vehicle Safety Act in 1966 and to our efforts to carry out its provisions by reducing traffic injuries and deaths, by every means possible.

We recognize that improper actions on the part of drivers and pedestrians and hazardous road conditions cause many of these fatalities. We are now evolving a broad range of programs to do something about this part of the problem. For example, studies we have made show that alcohol is a major contributive factor in fatal crashes. As a result we are undertaking, with the State governments, a tough program of countermeasures to identify chronic alcoholics and keep them from behind the wheel. Attached is a copy of a newspaper article on our efforts in the area which I am sure will be of interest to you.

However, the other aspect of the problem is the vehicle itself and here we have convincing evidence that improvements can be made in design to provide more safety. Your letter mentions several: occupant restraints, impact absorbing steering columns, and padded interior as being effective. These features are required by Federal safety standards as you know. They are saving thousands of lives each year. We also know that much more needs to be done to make motor vehicles safer and are working on many new safety standards to achieve this. However, these standards cannot be established with confidence except through accurate laboratory and field measurements and careful analysis of results.

Factual, objective, and technically sound information cannot be obtained without the appropriate laboratories and associated measurement capability. This was clearly recognized by the Congress when it required that we study the needs for accident and injury research and test facilities.

With regard to the specific points in your letter, I have the following comments:

The Bureau has not been allotted \$10 million to prepare plans for a proving ground nor have any appropriations been requested from the Congress for this amount. However, several weeks ago the House Committee on Interstate and Foreign Commerce reported out a bill authorizing planning, design, and construction of research facilities provided we submit a detailed prospectus for each facility sought. Even if the prospectus is affirmed this in itself will not provide any funds. These must be sought from the Appropriation Committees.

In October 1968 we submitted a report to the Congress, in accordance with the provisions of the law, on "Requirements for Motor Vehicle and Highway Safety Research and Test Facilities." I am attaching a copy of this report. It provides a complete justification for the need of facilities and recommended \$10 million for engineering planning and design.

As indicated by the report, maximum use will be made of existing Government facilities but some needed facilities do not exist and must be built. Automobile manufacturers have built extensive research facilities and we are investigating the possibility of using them. There is a problem, however, in this regard. This relates to the feasibility of using the facilities of one company to evaluate the compliance of its products and the products of its competitors with Federal standards.

The basic purpose of the test facilities we require is to make physical test and measurements to insure compliance with existing safety standards, to develop scientific data for developing new safety standards and to investigate safety defects. We hope to make public the results of these tests to the maximum extent possible.

The purpose of NHTSB is not to coerce manufacturers into building cars the way

1458

the Bureau thinks they should be built. However, insofar as the safety quality of the vehicle is concerned, the Bureau has the responsibility and the authority to stimulate the manufacturers to improve safety quality; but, in all cases, this is done under the authority of the Administrative Procedures Act which provides industry with a full opportunity to have their views heard and evaluated. Furthermore, as the Secretary has stated, and the Bureau staff has stated repeatedly, we would far prefer to have industry move ahead with improved safety performance of its products voluntarily without waiting for Federal rules to be issued.

The Bureau has the responsibility of public trust to fully inform the consumer of such information as the comparative hazards of different products. Furthermore, under the Freedom of Information Act, it has no alternative other than to release to the public any relevant information collected with Federal funds.

The problem of staffing the Bureau with competent technical people has been a problem from the start. Several recruiting campaigns were conducted in Detroit, Cleveland, and other large cities. Inasmuch as the best automotive brains work for the automotive industry, then the Government has no choice but to look to industry as the most important field for recruiting.

Government facilities are provided for testing airplanes and suggesting new designs as well. The Government also tests other products relating to health and safety, such as drugs and foodstuffs. Pursuant to new rulemaking action on any product, the cognizant Government agency must proceed on the basis of hard, scientific fact, and, in most instances, such facts will not be forthcoming except through laboratory or proving ground types of testing.

The law specifically directs the Secretary to establish standards in the context of performance rather than the design. Thus, the observation that the Government should not tell the manufacturers to meet the standards completely coincides with the law under which NHTSB is operating. However, while the NHTSB has no intention "to delve into every phase of automotive engineering and manufacturing," it must be able to conduct whatever research is required to assure that the standards that it sets, and is responsible for, are not set in a vacuum.

A number of small domestic manufacturers, including the bulk of the parts producers and after-market suppliers, do not have the physical research and test facilities required for product development. In this sense, these smaller domestic producers cannot even compete with the larger domestic companies. Furthermore, a number of foreign producers have better physical test facilities than these presently available to our smaller domestic producers. If a suitable Government research and test facility or proving ground is constructed, it will become available to all groups of users, not solely the Government. If anything, the fact that a Government facility is in operation can very well reduce a substantial part of the research burden now being carried by individual companies. For example, if certain basic research of general interest to all producers were conducted in a Government facility, this would eliminate the necessity of conducting this work in private facilities and the likelihood of duplication of the same work between companies in the context of proprietary interest.

The desirability of cooperation between industry and Government is fully recognized by the Department. Secretary Volpe expressed this as follows in a speech before the Automotive Safety Foundation:

"Industrial leaders should insist that their cars be designed from road to rooftop as mobile safety systems. I would hope that the auto industry will recognize the problem, as it has begun to do, and give as much serious consideration to safety as to beauty, comfort, and power. If all of us—industry, government, and the public—work together to set new goals and apply what we already know, I would hope that we could save perhaps 15,000 American lives per year."

I am enclosing a copy of the Secretary's speech.

Other countries do, in fact, maintain central Government research laboratories, for example, the Road Research Laboratory in England. In the United States, there are a number of Government owned or operated laboratories or research facilities, some of which are operated for the Government by industry. Argonne National Laboratory, Brookhaven, etc., so there is nothing new in the idea of Government research laboratories.

STATE AND COMMUNITY HIGHWAY SAFETY

Mr. McFALL. Place pages 201-220 in the record at this point.
(The pages follow:)